grass valley

SALES MANUAL

T2 iDDR

November 2011

Version 1.1 – added file formats supported during import (see page 9)
Version 1.2 – added Update/Restore process (see page 12)
Version 1.3 – added new Service Pack 2 features (see page 3)
Version 1.4 - added new Service Pack 3/4 features (see page 4)

What is the T2 iDDR?

The T2™ Intelligent Disc Recorder (iDDR) is a non-linear "deck" that delivers multiple high-definition or standard-definition capture and playback channels to a wide range of professional applications.

KEY FEATURES

- HD support, 1080i & 720p
- HD/SD SDI inputs and outputs
- File import (Grass Valley™ HQ, MPEG-2, QuickTime, and WMV)
- High bit-rate, full-resolution video with Grass Valley HQ
- 4:2:2 color space
- Familiar front panel controls
- 7-inch front panel display
- Grass Valley Indigo™ A/V mixer-compatible
- Analog AV connections
- RS-422A support for each channel
- New transition effects for playlists
- Applications:
  - —Events and staging
  - —Auditoriums
  - —Corporate AV centers
  - —Education facilities
  - —Broadcast display support
  - —Community television (CATV)
  - —Regional sports companies
  - —Switcher support for playback

Overview of T2 iDDR

Introducing the T2 iDDR, a next generation digital disk recorder that combines advanced NLE technology with familiar VTR/VCR-like controls. This recorder offers superb image quality, versatility, and usability.

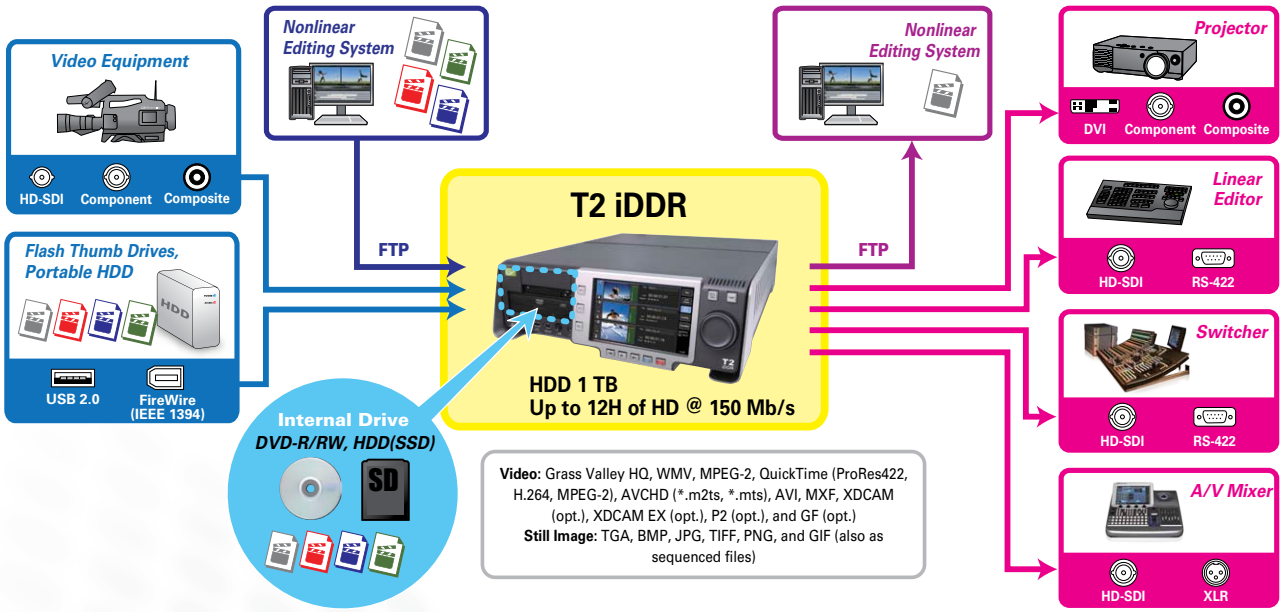
Highlights of the T2 iDDR include full HD support, easy control through touchscreen panel and jog dial interfaces, design and specifications ensuring adaptability to many workflows, and the convenience of digital systems in searching and random access. The T2 iDDR is the result of in-depth customer research. It leverages Grass Valley technology and expertise to deliver a live production product at prices substantially below other products in this market.

This sales manual summarizes T2 iDDR features and highlights the advantages of using T2 in live production applications.

We encourage Grass Valley dealers and distributors to apply this information in educating professional clients looking for HD-compatible digital equipment to replace their familiar VTRs, or potential customers looking for an affordable way to create tapeless workflows. Assure them that the T2 iDDR was developed precisely to satisfy these needs.

Large touchscreen front panel with 7-inch wide display.

T2 IDDR MAIN WORKFLOW



T2 iDDR Line-Up

Three internal storage options are available to suit various user needs and applications. Upgrades (from one model to the next) are not offered.

Product Name	System Disk Capacity	Data Disk Capacity	Recording Capacity (Hours/150 Mb/s)	RAID	Optical Drive
T2 iDDR	16 GB SSD	500 GB HDD X2	Approx. 12 hours	RAID-0	DVD-ROM ×1
T2 iDDR RAID		500 GB HDD X4	Approx. 12 hours	RAID-10	DVD-ROM ×1 2.5" HDD or SSD bay ×1
T2 iDDR SSD		160 GB SSD X 2	Approx. 4.5 hours	RAID-0	

Overview of T2 iDDR (cont.)

Main Features of T2 iDDR

The T2 iDDR includes a rich feature set, making it an ideal replacement for traditional VTRs and an affordable solution when moving to tapeless workflows. The following table summarizes key T2 iDDR features:

Category	Function	Detail
Ingest	Live video input	Capture and record live video on any T2 iDDR input: HD/SD SDI, DVI, and SD composite
	File format import	Import common file formats from external applications, such as nonlinear editing systems, via USB (flash memory or external HDD), DVD data discs, or making use of the gigabit Ethernet input for FTP import. Supported files types include QuickTime, Windows Media, MPEG, and Grass Valley HQ
	Audio input	Capture SDI embedded audio (up to eight channels), or use XLR connectors to capture AES/EBU or baseband audio (two channels)
Manage Playlists	Edit clips	Edit the clips captured or imported by easily setting Mark In and Mark Out points. You can also edit those clips while creating playlists
	Create playlist	Build and manage playlists. Select clips and playlists for preview. Mix HD and SD content in the same playlist
	Create highlight packages in real time	Edit highlight packages on-the-fly. Select, edit, and trim segments without interrupting program record. Send highlight packages to an output channel, or transfer to a playback server
Playback	Two independent output channels	Completely independent output channels allow maximum playback flexibility and control
	Synchronized playback	Output channels can be "locked" to each other for frame-accurate, synchronized playback. Useful for full-resolution 3D content or studio set background "match frame" loops
	Search	Search tools allow rapid retrieval of desired files. Nonlinear access allows immediate playback
Remote Control	GPI and RS-422 interfaces allow remote control	

New Service Pack 2 (SP2) available June 2010

In response to market feedback, T2 SP2 will include the following new features:

More Import File Formats Supported

Please check the import file format support chart on page 10.

Direct Playback Support

Users can play back their Grass Valley HQ content directly from the 2.5 inch disk or via USB 2.0 / FireWire (IEEE 1394). (Note: If the video bit rate is too high, playback may not be frame accurate, due to the interface bandwidth restriction)

Exporting a Clip While Recording

This function is useful for content backup and, combined with Direct Playback Support, makes T2's internal storage more flexible. For example, you can delete the clip on the T2 to free internal space, but the clip is still available for playback from an external storage device

Still Picture Support

T2 will support the import of JPEG, TGA, BMP, PNG, TIFF, and GIF files, up to a resolution of 4K. Sequences are also supported (alpha channel not yet supported).

FTP Upload/Download

Users will not only be able to push files to the T2, but also retrieve via FTP.

Import and Export Files From/To a NAS

Slow-Motion Enhancements

Slow-motion functions are extended by adding the option to pause in "frame" or "field" mode, a VAR (variable speed) GUI in Workstation mode, the ability to control the Jog/Shuttle from the Workstation and more VAR speed controls.

Auto Play Mode

As soon as a clip is loaded to a channel, it will begin playing back, without the need to click on the play control. Keyboard and mouse control customization has also been added for improved usability.

More Audio Codec Support

SP2 adds AC3, AAC, and WMA support.

GUI Improvements

Thumbnail preview when adding clips to the playlist in Front Panel mode; addition of "Remain TC" when monitoring.

Multi-language Support & Localization

T2 will support English, French, Spanish, Italian, German, and Chinese languages; GUI is localized for each region.

Player Functionality Enhancements

SP2 adds the capability to upconvert SD files to HD and vice-versa. (Note: There may be restrictions on simultaneous channel use).

Playlist Functionality Enhancements

SP2 adds the capability to mix different resolutions in the same playlist. (Note: There may be restrictions on simultaneous channel use).

Overview of T2 iDDR (cont.)

New Service Pack 4 available November 2011

Details available at the Grass Valley website at http://www.grassvalley.com/products/t2 and click on "Manuals." Select "T2 Intelligent Digital Disk Recorder (iDDR) — Addendum (SP3/SP4) — User Manual."

Extended File Support:

- XDCAM EX .mp4 native playback (requires XDCAM opt.)
- AVCHD native playback
- Grass Valley HQ MXF OP-1a container native playback
- EDIUS® can now send its edited files directly to T2
- Ability to export T2 playlist as a single file in HQ or XDCAM HD formats

VTR-like Functions:

- T2 can be locally controlled while in Remote mode (function canned be turned off)
- RS-422 (BVW) REC commands support
- Crash REC is now supported using RS-422 (BVW) remote (editing commands such as assemble and insert are not supported)
- GPI tally output (GPI) while recording or playing back
- VTR control for Batch Capture from NLE Batch list (EDIUS, Avid, and Final Cut Pro)

Playback:

- New playlist "tile view" GUI added
- Playlist templates added (playlist actions can be now saved as templates)

Time-shift Playback:

- Automatic mounting of clip being recorded to a specific playback channel (user specified)
- Automatically register sub-clips created during recording to be mounted on a specified playlist
- Automatically export clip being recorded to an external device (USB or NAS)

Controlling Multiple T2s:

- Syncing content between multiple T2s is now possible
- Playlist import/export, with all settings saved
- Synchronized, frame accurate playback of multiple T2s when controlled via GPI

Miscellaneous:

- T2 will remember current status when shut down, including auto play and the option to automatically play mounted clips
- T2 will remember all browse information and network configuration on shutdown
- Keyboard shortcuts to extend playback speed in 1% intervals
- Added keyboard shortcut to change the focus of windows
- Enhanced In/Out settings for clips (no need to "set" any longer—"In" or "out" will set the point)
- Convert P2 files to MXF OP-1a during import (no codec conversion)
- Convert OP-Atom to OP-1a container during import (no codec conversion)
- Selection of timecode for each event inside a playlist (source, playlist, or user specified for each event in the playlist)
- Wake on LAN power on

Sales Points & Target Markets

Many outstanding features set the T2 iDDR apart from competitive products. Here, we focus on four highlights we consider to be particularly compelling sales points:

1 – Picture Quality

Outstanding image quality is a very important advantage of the T2 iDDR. We consider this as a leading sales point. Specifically, not only SD video but also full HD (1920x1080), older VTR-compatible 1080i and 720p, and high-quality 1080/24 psf output is supported.

The secret to superb image quality is internal processing with the Grass Valley HQ Codec, one of the favorite formats among broadcasters and others in the industry. Featuring dynamic compression adjustment to suit content, the Grass Valley HQ Codec supports bit rates to up to 200 Mb/s while offering excellent image quality rivaling HDCAM and DVCPRO HD.

Video Codec	Max. Resolution	Color Sampling / YCbCr	Bit Rate (Mb/s)
Grass Valley HQ Codec	1920×1080	4:2:2	50 – 200
HDCAM	1440 x 1080	3:1:1	140
DVCPRO HD	1280 x 1080	4:2:2	100
AVC-Intra 100	1920 x 1080	4:2:2	100
XDCAM (MPEG HD422)	1920 x 1080	4:2:2	50
XDCAM (MPEG HD)	1440 x 1080	4:2:0	18, 25, 35
HD D5	1920 x 1080	4:2:2	270
HDCAM-SR	1920 x 1080	4:2:2, 4:4:4	440 (normal mode), 880 (FF mode X2)

2 – Easily Adaptable to a Range of Workflows

The T2 iDDR is much more than a replacement for traditional VTRs because it is a versatile solution that meets a variety of needs in production of live content. The unit also effectively completes or complements the following environments:

1. All steps in content production and playout—from recording live events and making playlists to playout
2. Easy and high-level integration with EDIUS or other NLEs for workflow improvements
3. Importing, transcoding, and playout of a variety of video material
4. Use as a straightforward playout device, maintaining support for ANC data
5. Editing of highlight scenes
6. Playback of computer graphics and 3D content, using Sync

To support these workflows, the T2 iDDR was designed accounting for the following diverse specifications:

Provides an environment with a generous range of I/O interfaces	Input: HD-SDI, DVI, gigabit Ethernet, FireWire (IEEE 1394) (External HDD only), USB 2.0, and FTP Output: HD-SDI, DVI, RS-422, and a wide variety of other input/output interfaces
Broad video format support	The unit offers comprehensive support for all input formats that may be needed. AVI, QuickTime, Windows Media, and MPEG-2 are supported. Computer resolutions can also be supplied, allowing playback of video with text
Use on both channels at once	Ganged or independent control of the two playback channels loaded with HD clips is supported, even during ingest
Two independent output systems	With two fully independent output lines, video can be supplied to separate monitors, or playback can be synced, for example for 3D presentations
Can also be connected for external control	External operation is supported, through controllers or switchers connected via RS-422 or AMP (Indigo only)
Refined usability	Many controls ensure user-friendly operation, including a touchscreen panel on the front, jog dial, and Rec and Play buttons. USB 2.0 and FireWire (IEEE 1394) interfaces are also provided, as well as a headphone jack

3 – Innovative Yet Intuitive Controls

Usability can also be considered a major advantage of the T2 iDDR. In-depth study of NLE and traditional VTR controls led to an innovative interface that combines the benefits of both. The intuitive, instantaneous control of a touchscreen panel is complemented by a jog dial, providing a sense of control equivalent to that of familiar VTRs.

4 – Cost-performance that is Clearly Superior to Similar Products

Refer to the comparison of the T2 iDDR with competitive products (p. 7). With greater versatility than similarly positioned units, the T2 iDDR offers a polished control system and can be deployed at half the cost of alternative products.

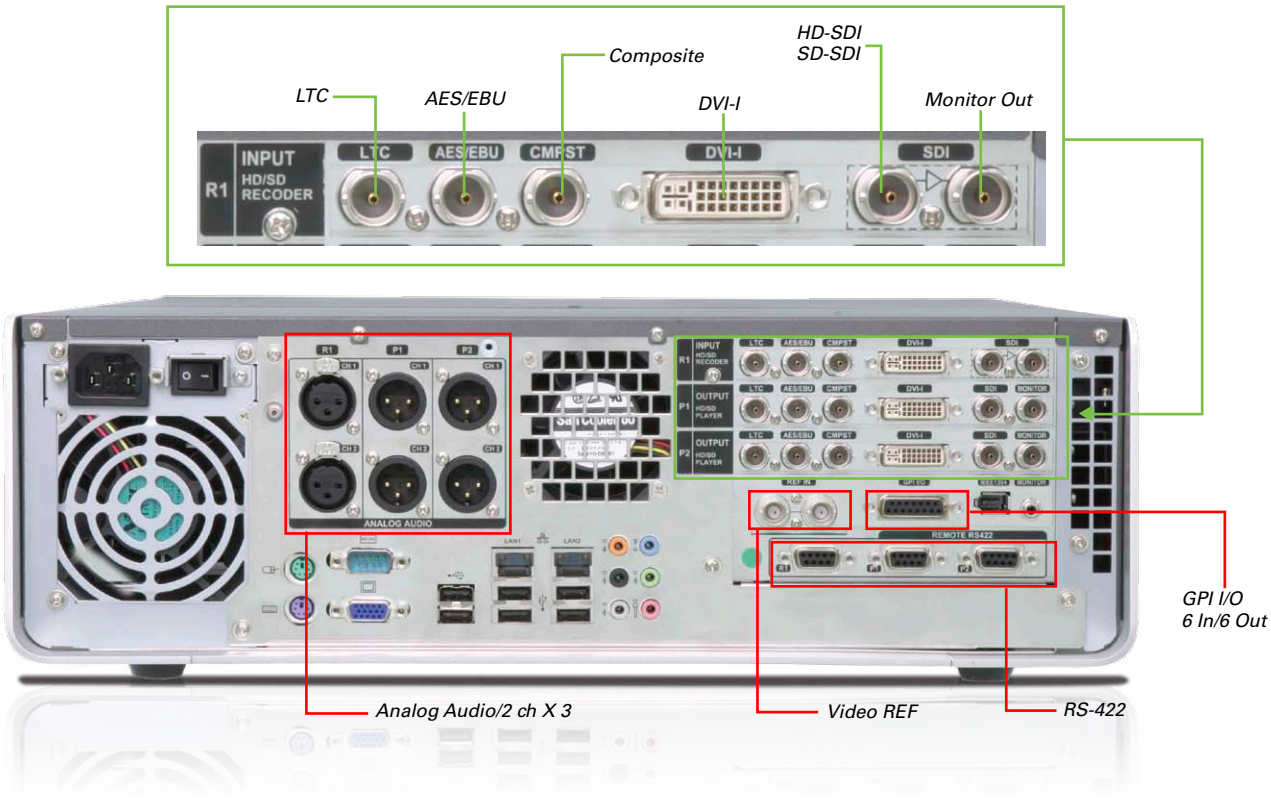
Comparison With Grass Valley Products

Brand	**Grass Valley**		
Model & Image	**T2 iDDR**	**Turbo iDDR**	**K2 Summit Production Client**
Target Market	ProAV/Events	ProAV/Events	Broadcast
Front Panel	Yes	Yes	None
HD-SDI Interface (in/out)	1 in/2 out	2 out (in SD only)	4 bi-directional channels
1080p Support	Yes	None	None
DVI In/Out	Yes	None	None
Import Files (Ethernet)	Yes	None	Yes
Import/Export Files (USB)	Yes	Yes	None
Removable Media	Yes	Yes	None
Control	AMP, RS-422	AMP, RS-422	AMP, RS-422, VDCP
Storage	12H @HD	10H @HD	Unlimited
Size	3 RU	3 RU	2 RU
RAID	RAID-0 or -10	None	RAID-1 or -0
Two Simultaneous Outputs	Yes	Yes	Yes
Time Shift Playback	Yes (1 in/2 out support)	Yes	Yes
Playlist Creation	Yes	Yes	Yes
Internal Format	Grass Valley HQ Codec	MPEG-2	DV25, DV50, DVCPRO HD
Slow Motion	Yes	None	Yes
CG Playback (Sync Playback)	Yes	None	None
File Format Support (Import/Export/ Transcode)	**Video:** Grass Valley HQ, WMV, MPEG-2, QuickTime (ProRes422, H.264, MPEG-2), AVCHD (*.m2ts, *.mts), AVI, MXF, XDCAM (opt.), XDCAM EX (opt.), P2 (opt.), and GF (opt.) **Still Image:** TGA, BMP, JPG, TIFF, PNG, and GIF (also as sequenced files)	AVI, MPEG-2, QuickTime, WMV, GXF	GXF, MXF, DV25, DV50, DVCPRO HD
Price	~$13K	~$10K	~$64K

Comparison With Competitive Products

Brand	Grass Valley	Doremi	Sony	FFV	360 Systems
Model & Image	**T2 iDDR**	**V1HD**	**PDW-HD1500**	**ΩMEGA HD**	**MAXX-1200 HD**
Target Market	ProAV/Events	ProAV	ProAV/Broadcast	Broadcast	Broadcast/ProAV
Front Panel	Yes	Option	Yes	Yes	None
HD-SDI Interface (in/out)	1 in/2 out	1 in/1 out	1 in/2 out	1 in/1 out	1 in/2 out 0 in/3 out
1080p Support	Yes	Yes	Yes	None	None
DVI In/Out	Yes	None	None	None	None
Import Files (Ethernet)	Yes	Yes	Yes	None	Yes
Import/Export Files (USB)	Yes	None	None	None	None
Removable Media	Yes	None	Yes	None	None
Control	AMP (via Ethernet), BVW (via RS-422), GPI (via GPI port)	RS-422, VDCP	RS-422	RS-422	RS-422, VDCP
GPI	6 in/ 6 out	4 in (option)	None	None	6 in/ 6 out
Storage	12H @HD	5H @HD	None	18H	70H
Size	3 RU	3 RU	Approx. ½ 3 RU	2 RU	3 RU
RAID	RAID-0 or -10	RAID-0 or -5	None	None	RAID-5
Two Simultaneous Outputs	Yes	None	None	Researching	Yes
Time Shift Playback	Yes (1 in/2 out support)	Option	None	Yes	Yes
Playlist Creation	Yes	Yes	Yes	Yes	Yes
Internal Format	Grass Valley HQ (1920 x1080)	Uncompressed or JPEG 2000	MPEG-2	JPEG 2000	JPEG 2000
CG Playback (Sync Playback)	Yes	Yes	None	None	Yes
File Format Support (Import/Export/ Transcode)	**Video:** Grass Valley HQ, WMV, MPEG-2, QuickTime (ProRes422, H.264, MPEG-2), AVCHD (*.m2ts, *.mts), AVI, MXF, XDCAM (opt.), XDCAM EX (opt.), P2 (opt.), and GF (opt.) **Still Image:** TGA, BMP, JPG, TIFF, PNG, and GIF (also as sequenced files)	Uncompressed or JPEG 2000	XDCAM	None	JPEG 2000
Price	~$13K	~$30K	~$26K	~$30K	~$15K

Rear Panel Connectivity



FAQ

Q1. **What are the key sales points of the T2 iDDR?**

A1. The four key points are superior image quality, versatile design, and specifications that complement a variety of workflows, refined usability, and outstanding cost-performance. For details, see p. 5.

Q2. **What are the differences from the K2 playout server?**

A2. T2 iDDR is a ***deck***, K2 is a playout ***server***. T2 iDDR does not have the same feature set as a broadcast server, such as redundant power supplies, nor does it have the extensions that the K2 has: data capacity is limited and the workflows are more limited than the K2.

Q3. **The unit enables basic editing, but can effects be added? If so, what effects are available?**

A3. To all clips in a playlist, or to individual clips, the following effects can be added:

- Fade-in at the beginning of clips
- Fade-out, B/W display, pause, and E-E effects available at the end of clips

Q4. **Does the unit support Blu-ray input or output?**

A4. There are no plans for Blu-ray compatibility at present.

Q5. **Can I mix SD or HD clips in a playlist?**

A5. Yes, with Service Pack 2 installed.

Q6. **What kind of video output is provided in presets (color backgrounds, color bar patterns, etc.)?**

A6. Color bars are provided.

Q7. **Will the built-in storage be expandable at a later date?**

A7. This kind of service is not planned. In fact, replacing the storage may damage the system, and we strongly discourage modification by dealers.

Note that opening the case voids the warranty.

Q8. **Who handles unit setup? How much does installation generally cost?**

A8. Installation is done by dealers or reliable, experienced technicians. Installation costs are left to dealer discretion.

Q9. **Is training available at the time of installation?**

A9. Availability varies by region. Contact your sales representative.

File Formats Supported During Import

The T2 iDDR includes software to facilitate the import and export of program material. T2 stores content for playback using the Grass Valley HQ video codec, an intermediate codec similar in many respects to Apple's ProRes or Avid's DNxHD. Intermediate codes are used to preserve original picture quality without the massive storage requirements of uncompressed digital video.

Grass Valley HQ Performance

The Grass Valley HQ Codec adjusts its compression rate dynamically depending on the image to deliver a high image quality comparable to, or better than, HDCAM or DVCPRO HD.

A variable bit rate codec prevents the loss of detail in particularly complex images that can occur when using storage methods, such as tape, where the bit rate is fixed, or in very high compression software codecs like MPEG-2 or MPEG-4.

The Grass Valley HQ Codec preserves 4:2:2 color space and maintains full 1920 (or 1440) luminance sampling delivering quality comparable to Sony's HDCAM-SR (SMPTE 409M-2005), but at less than half the data rate.*

Format Support

The T2 iDDR transcoding capabilities allow direct import of a wide range of file types and formats. T2 will convert those formats to the Grass Valley HQ Codec for internal storage and playback. The table on the next page summarizes the import formats presently supported.

* The typical HDCAM-SR data rate is 440 Mb/s, where the Grass Valley HQ Codec averages between 150-200 Mbps delivering about 55% bandwidth reduction over HDCAM-SR. Uncompressed high-definition digital video runs at nearly 1 Gb/s. The Grass Valley HQ Codec delivers an astonishing 85% bandwidth reduction compared to uncompressed digital video.

File Formats Supported During Import (cont.)

Resolution	Frame Rate	R1	P1/P2	HQ Codec (AVI)	QuickTime DV	QuickTime DVCPR HD	QuickTime ProRes	QuickTime H.264	Windows Media	MPEG-2 Pgm Stream	MPEG-2 HD (HDV)
720x486	59.94i	Yes	Yes	Yes	—	—	Yes	Yes	Yes	—	—
720x480 (DVD**)	59.94i	—	—	Yes	—	—	Yes	Yes	Yes	Yes	—
720x480 (DV**)	59.94i	—	—	Yes	Yes	—	Yes	Yes	Yes	—	—
720x576 (DVD**)	50i	—	—	Yes	—	—	Yes	Yes	Yes	Yes	—
720x576 (DV**)	50i	Yes	Yes	Yes	Yes	—	Yes	Yes	Yes	—	—
1920x1080	59.94i	Yes	Yes	Yes	—	—	Yes	Yes	Yes	Yes	—
1440x1080	59.94i	Yes	—	Yes	—	—	Yes	Yes	Yes	—	Yes
1280x1080	59.94i	—	—	Yes	—	Yes	Yes	Yes	Yes	—	—
1920x1080	50i	Yes	Yes	Yes	—	—	Yes	Yes	Yes	Yes	—
1440x1080	50i	Yes	—	Yes	—	Yes	Yes	Yes	Yes	—	Yes
1280x720	59.94p	Yes	Yes	Yes	—	—	Yes	Yes	Yes	Yes	Yes
960x720	59.94p	—	—	Yes	—	Yes	Yes	Yes	Yes	—	—
1280x720	50p	Yes	Yes	Yes	—	—	Yes	Yes	Yes	Yes	Yes
960x720	50p	—	—	Yes	—	—	Yes	Yes	Yes	—	—
1920x1080	24p	—	Yes (p/PsF)	Yes	—	—	Yes	Yes	Yes	—	—
1440x1080	24p	—	—	Yes	—	—	Yes	Yes	Yes	—	—
960x720	24p	—	—	Yes	—	—	Yes	Yes	Yes	—	—
1920x1080	23.98p	—	Yes (p/PsF)	Yes	—	—	Yes	Yes	Yes	Yes	—
1440x1080	23.98p	—	—	Yes	—	—	Yes	Yes	Yes	—	Yes
1280x1080	23.98p	—	—	Yes	—	—	Yes	Yes	Yes	—	—
1280x720	23.98p	—	Yes	Yes	—	—	Yes	Yes	Yes	Yes	Yes
960x720	23.98p	—	—	Yes	—	Yes	Yes	Yes	Yes	—	—
1280x720	24p			Yes	—	—	Yes	Yes	Yes	—	—

** DVD indicates "top field first." DV indicates "bottom field first."

AVCHD import and export functions

Supported formats (✓: Supported, X: Not supported)

Codec	Type	Frame size	Frame rate	R1*/P1/P2	Import (AVCHD)	Import AVCHD→ Grass Valley HQ AVI)
H.264/ AVC	AVCHD	1920 x 1080	59.94i	0 in 1 out	✓	✓
			50i	0 in 1 out	✓	✓
			23.98p	0 in 1 out	✓	✓
		1440 x 1080	59.94i	0 in 1 out	✓	✓
			50i	0 in 1 out	✓	✓
			23.98p	0 in 1 out	✓	✓
		1280 x 720	59.94p	0 in 1 out	✓	✓
			50p	0 in 1 out	✓	✓
			23.98p	0 in 1 out	✓	✓
		720 x 480	59.94i	0 in 1 out	✓	✓
		720 x 576	50i	0 in 1 out	✓	✓
	AVCHD-PRO (PH-mode)	1920 x 1080	30p (over 60i)	—	×	✓
			25p (over 50i)	—	×	✓
		1280 x 720	30p (over 60p)	—	×	✓
			25p (over 50p)	—	×	✓
	NXCAM	1920 x 1080	60i	0 in 1 out	✓	✓
			24p	0 in 1 out	✓	✓
			30p	—	×	✓
			50i	0 in 1 out	✓	✓
			25p		×	✓
		1280 x 720	60p	0 in 1 out	✓	✓
			50p	0 in 1 out	✓	✓
		1440 x 1080	60i	0 in 1 out	✓	✓
			50i	0 in 1 out	✓	✓

* Formats for Grass Valley HQ.

The following table lists the availability of direct playback, FTP transfer, import, and export operations for each format:

- AVCHD single file (*.mts, *.m2ts)

Browse		FTP		Import		Export	
List view	Direct playback	Upload	Download	Import	Post-import format	Export	Post-export format
✓	No*	✓	✓	✓	AVCHD	✓	AVCHD
					Grass Valley HQ AVI	✓	Grass Valley HQ AVI or XDCAM (MXF single)

* After importing, playback in the AVCHD format is available.

CAUTION: Clips in the AVCHD format are available only for 1 Out. If you want to play a clip in the AVCHD format while recording in the R1 channel, play a clip in the P1/P2 channel, or load a different clip in P1/P2 channel, you must stop the recording/playback operation or unload the clip.

CAUTION: If you play clips in the AVCHD format at other than single speed, clips may not be played clearly. If you want to play clips clearly at other than single speed, we recommend that you convert them to Grass Valley HQ AVI for import.

CAUTION: The system is under heavy load during playback of clips in the AVCHD format. We recommend that you reduce the load on the system

T2 Update/Restore Process

NOTE: Be sure to connect an external VGA display, keyboard, and mouse before starting.

Back up your media before proceeding, this process will erase all media.

1) Insert the Image DVD in the T2 and reboot.
2) At the start of the boot process, repeatedly tap F10 on the keyboard (do not hold it down, tap it several times) stopping when you see the Boot Menu appear.
3) In the Boot Menu, use the arrow keys to select "PCI BEV: 11:08-0 ATAPI…" as the Boot source. The selected item's text is white. Press ENTER.
4) You will be prompted to press any button to boot from CD or DVD. Do so, quickly. Windows, and then Ghost will load.
5) "About Symantec Ghost" will display, click OK.
6) In the Symantec menu, select "Local," then select "DISK" and then in the "Action" menu, select "From Image."
7) In the "Look In:" panel, select "F: [CD_ROM] CD ROM/DVD Drive."
8) Below that, select the ghost image "xxxx.GHO" file on the DVD.
9) Select the Local Destination Drive: MTRON. Selection will have dark blue background stripe.
10) For the remaining choices, just press next taking the default choices.
11) Proceed with restore? Select YES.
12) You'll be asked to reset your computer, reset it. The T2 will boot into Maintenance Mode.
13) In Maintenance Mode, select Data, and Initialize. There will be three check boxes, be sure all three are selected, and then proceed.
14) If asked to reboot, proceed, but note that you can select whether or not the system will reboot into Maintenance Mode. From here, typically you will not need Maintenance Mode.

Technical Specifications

T2 iDDR Configurations

1 SD/HD input, 2 SD/HD outputs

Video Input

- Format support types: high-definition, standard-definition, computer
- Connections: SD/HD SDI, analog component (RGB or Y-Pb-Pr), DVI-I, composite
- Recording format: Grass Valley HQ, 4:2:2
- Bit rate: Up to 200 Mb/s
- Resolutions SD/frame rate: 720x486/29.97, 720x576/25
- Resolutions HD/frame rate: 1920x1080i/29.97 or 25, 1280x720p/59.94 or 50

Video Outputs

- Format support types: high-definition, standard-definition, computer
- Connections: SD/HD SDI, analog component (Y-Pb- Pr), DVI-I, composite
- Recording format: Grass Valley HQ, 4:2:2
- Bit rate: Up to 200 Mb/s per channel
- Resolutions SD/frame rate: 720x486/29.97, 720x576/25
- Resolutions HD/frame rate: 1920x1080i/29.97 or 25, 1920x1080p/59.94 or 50, 1920x1080pfs/24 or 23.98, 1280x720p/59.94, 50, 24, 23.98

Audio Input

- Analog audio: 2 channels, XLR connections
- Digital:
  - —AES/EBU (2 channels), BNC connections
  - —Embedded audio on SDI, HD or SD (8 channels)
- Recording format:
  - —16- or 24-bit, PCM, 48 kHz sampling (20-bit PCM for SD-SDI)

Audio Output

- Analog audio: 2 channels per output video, XLR connections
- Digital:
  - —AES/EBU (2 channels), BNC connections
  - —Embedded audio on SDI, HD or SD (8 channels)
- Recording format: 16- or 24-bit, PCM, 48 kHz sampling (20-bit PCM for SD-SDI)

Import/Export File Compatibility

- Import: Grass Valley HQ
- Export: Grass Valley HQ
- Transcode Import (all to Grass Valley HQ): MPEG-2, WMV, QuickTime to Grass Valley HQ (ProRes422, H.264, MPEG-2), AVCHD (*.m2ts, *.mts), AVI, MXF, XDCAM (opt.), XDCAM EX (opt.), P2 (opt.), and GF (opt.)
- Still Image Support (Import):TGA, BMP, JPG, TIFF, PNG, and GIF (also as sequenced files)

Control

- Protocol: BVW (Basic), AMP (Advanced Media Protocol)
- Connections: RS-422 (9-pin D Conn per channel), Ethernet, GPI

Technology

- Connections: gigabit Ethernet, USB 2.0 (4 each), VGA
- Storage Capacity: 2 disk drives, Approx. 12 hours of HD @150 Mb/s, 25 hours of SD @50 Mb/s
- Bit rate: Up to 200 Mb/s per channel

Physical

- Dimensions: 550 x 430 x 140 mm (21.6 x 16.9 x 5.5 in.)
- Weight: 15 kg (33 lbs.)
- Operating temperature: 5°C to 35°C (41°F to 95°F)

Options and Accessories

Rackmount kit

GLOBAL SERVICES

Grass Valley Global Services specializes in the defining of, deployment of, and support of today's dynamic file-based workflows, based on Grass Valley and third-party solutions. With Grass Valley Global Services, you can achieve your operational goals in the most efficient and cost-effective way possible with a partner you can trust.

www.grassvalley.com/support

Define: We help you to define your business and technology requirements and then design solutions to meet them.
Deploy: Our professional service organization, backed up with proven project management methodologies, can take you from design through deployment, commissioning, and training.
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